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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/934,572	08/23/2001	Masao Hagiwara	VX012339	7900

21369 7590 04/07/2004

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EXAMINER
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
LEJA, RONALD W

ART UNIT	PAPER NUMBER
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2836

DATE MAILED: 04/07/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 09/934,572	<b>Applicant(s)</b> HAGIWARA, MASAO	
	<b>Examiner</b> Ronald W Leja	<b>Art Unit</b> 2836	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 10 December 2003.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7 and 10-13 is/are rejected.
- 7) ☒ Claim(s) 8,9 and 14 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

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1. Claim 12 is objected to because of the following informalities:

There is a lack of antecedent basis for "said second current detector". Appropriate correction is required.

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claim 10 is rejected under 35 U.S.C. 102(a) as being clearly anticipated by Admitted Prior Art Figure 27.

The claim language is considered open-ended, and thus, allows for more than N+1 signal lines.

4. Claims 1, 6 and 7 are rejected under 35 U.S.C. 102(b) as being anticipated by Niwa et al. (4,485,424).

Niwa et al. disclose, in Figure 3, a solenoid driving device comprising a solenoid (13e) for driving an electromagnetic valve (see Col. 2, lines 49-52), switch means (17) for feeding an electric current from a first power source (11e) intermittently to said solenoid, and a current detector (16, 29, 30) connected between said solenoid and said switch means for detecting the electric current to flow through said solenoid. Said current detector is driven by a second power source (30 needs power for proper operation) and also (see Col. 6, lines 35-39 along with Fig. 9) (for Claims 6 and 7).

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5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 2 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Niwa et al..

Claim 2 requires that the current detector is disposed on the side of said first power source with respect to said solenoid. It is the opinion of the Examiner that it would have been obvious to switch the positions of the switch means with that of the solenoid, as the results in operation and performance would not change. The choice would depend upon whether one preferred a high-side driver over that of the disclosed low-side driver; an advantage of a high-side driver is that the solenoid would be additionally protected by being isolated from the power source when the switch was in the opened position, thereby, increasing overall design safety. Claim 5 essentially adds overcurrent detection. The teachings of Niwa et al. could be interpreted as providing overcurrent detection in that a detected error due to higher current flow is an error in control resulting from an excess or overcurrent flow through the solenoid. Niwa et al. further teach the use of absorber (18) for excess conditions (voltage & current). Therefore it is the opinion of the Examiner that it would have been obvious to include a current threshold for which an

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overcurrent condition was attached, as a means to further increase system protection, by compensating for such a detected condition; this could be a back-up for absorber failure.

7. Claims 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Niwa et al. in view of Suzuki et al. (5,941,282).

Claims 3 and 4 essentially add the use of the components (switch means & current detector) being disposed within a controller and use of a terminal portion. Niwa et al. do not appear to offer such details. However, Suzuki et al. teach a controller for an electromagnetic valve wherein the driving components are housed within a controller section separate from a solenoid section and a terminal portion is used to interface between the two sections. It would have been obvious to incorporate the teachings of Suzuki et al. as a means to offer protection from harsh operating environments to the control components, thereby increasing product durability and reliability.

8. Claims 11-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Admitted Prior Art Figure 27 in view of Niwa et al..

Claims 11-13 are drawn to having the current detectors located between the switch means and the solenoids, respectively, and having overcurrent detection. It would have been obvious to incorporate the teachings of Niwa et al. (Fig. 3) wherein the current detector is located between the switch means and the solenoid as a means to limit connection of the driver and detector circuits to only one terminal of the solenoid as opposed to both ends of the solenoid; this frees up the ground connection of the solenoid to other areas in the design as

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opposed to back to the controller, resulting in increased possible applications to existing systems. For Claim 13, Niwa et al. teach use of a current detector requiring a second power supply, supra. It would have been obvious to apply these teachings as a means to utilize the benefits of a Hall sensor over that of other current detectors, such as, a resistive sensor, which dissipates unnecessary power, leading to higher efficiency of the design.

9. Claims 8, 9 and 14 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

10. The following is a Statement of Reasons for the Indication of Allowable Subject Matter: The Prior Art of Record does not make obvious the added limitations of use of an energy storage component being disposed between the second direct current power source and the current detector as required by Claim 8 nor does the Prior Art of Record make obvious the added limitations found within Claims 9 and 14 of the use of a voltage/current converter.

11. Applicant's arguments have been considered but are moot in view of the new ground(s) of rejection.

12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

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A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ronald W Leja whose telephone number is (571)272-2053. The examiner can normally be reached on Monday thru Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Sircus can be reached on (571)272-2800. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

*Ronald W. Leja*  
Ronald W Leja  
Primary Examiner  
Art Unit 2836

*3/31/04*

rwl  
March 31, 2004